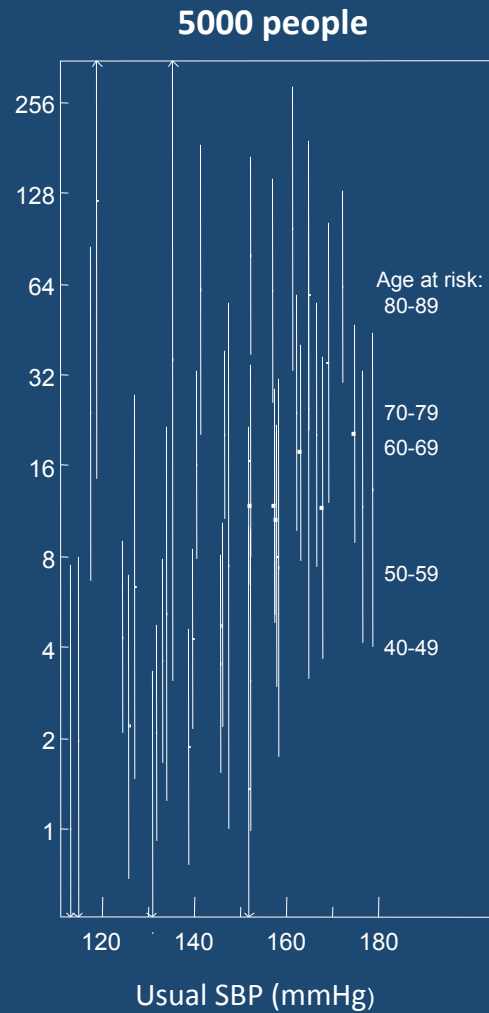


RWE challenge: The ROADMAP approach

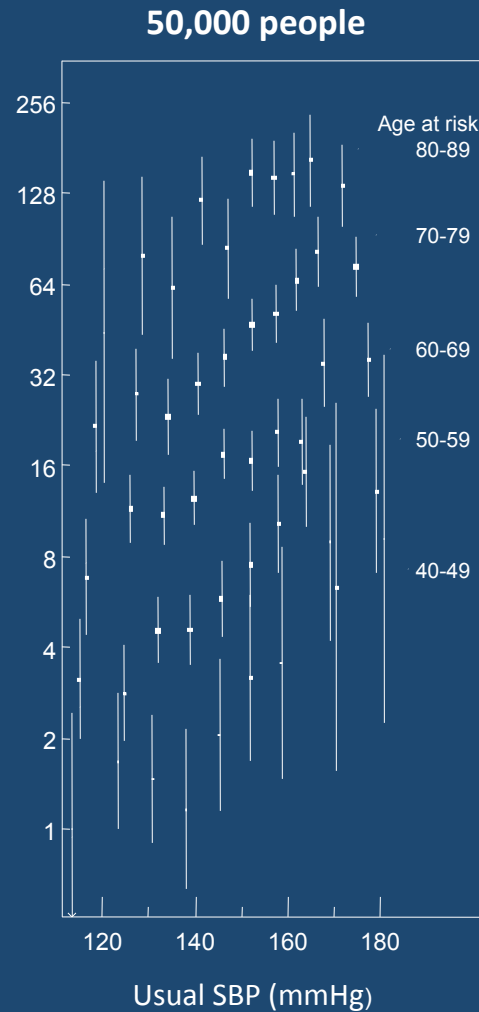
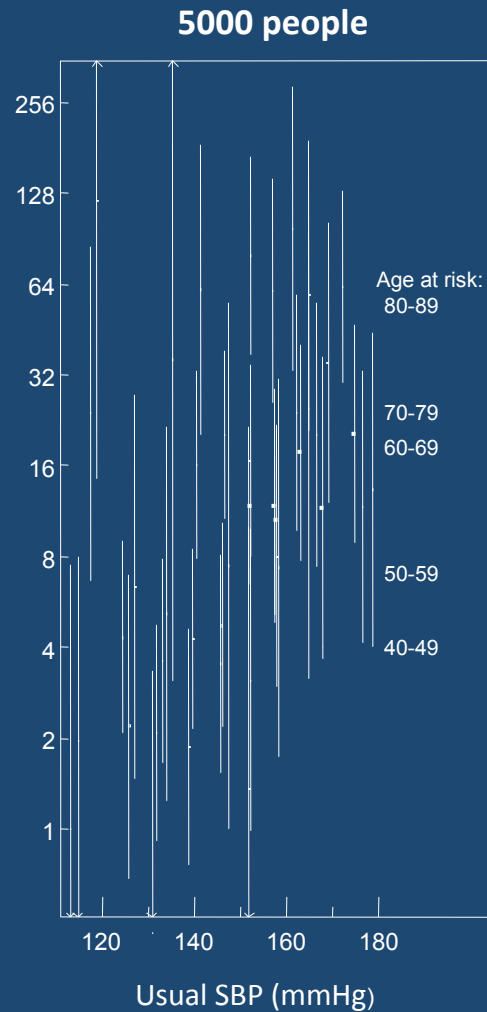
Low cost – high value

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 - Risk sharing between stakeholders
- **Mapping the patient journey**
 - Lifecourse approach
- **Data integration: Collating diverse and complex datasets**
 - High dimensional -> flat,
 - clean vs. noisy
- **In silico experiments**
 - Question specific designs
 - From functional definition to biological mechanism
 - From etiology to public health benefit

The precision medicine challenge

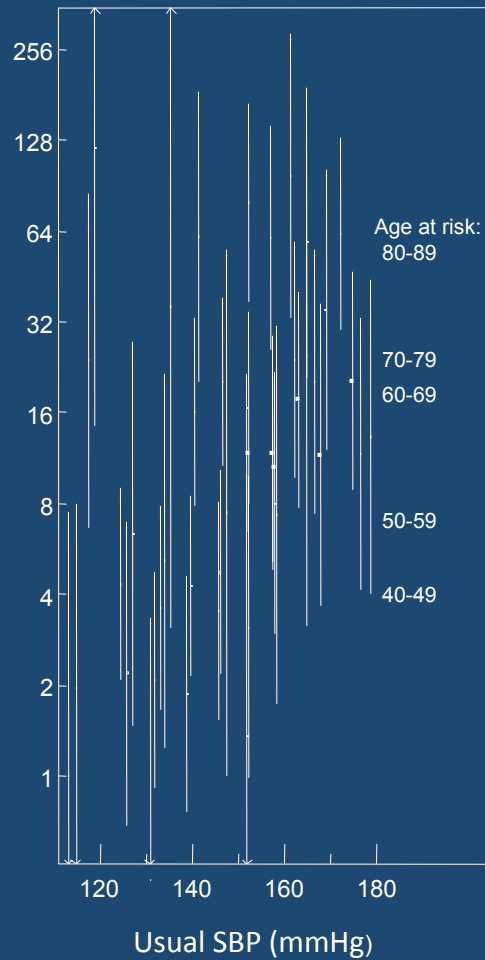


The precision medicine challenge

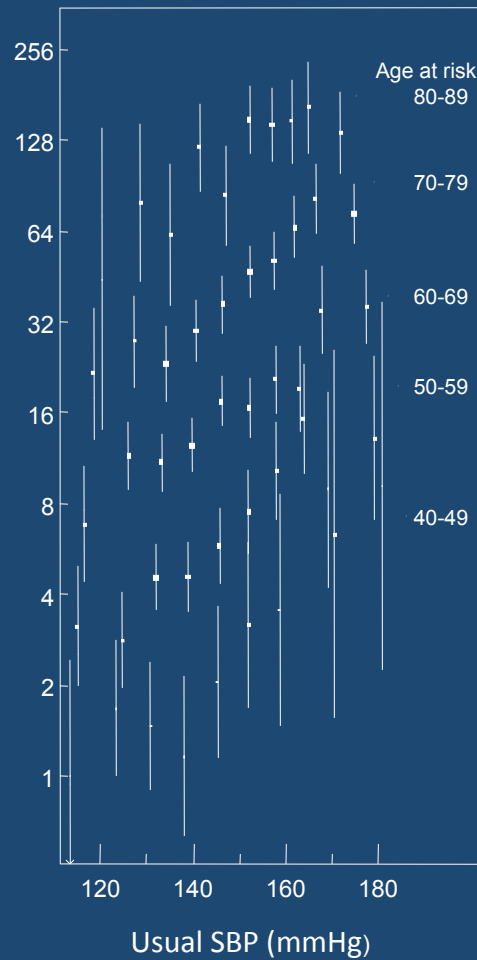


The precision medicine challenge

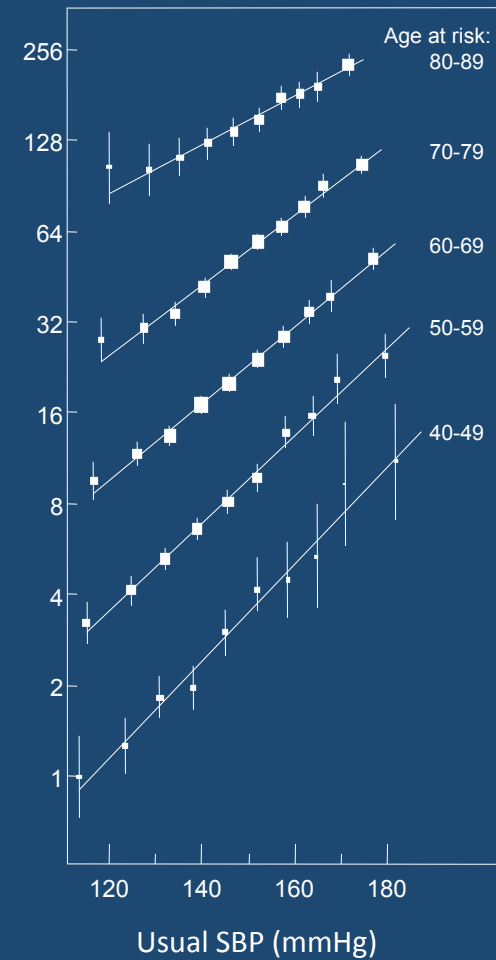
5000 people



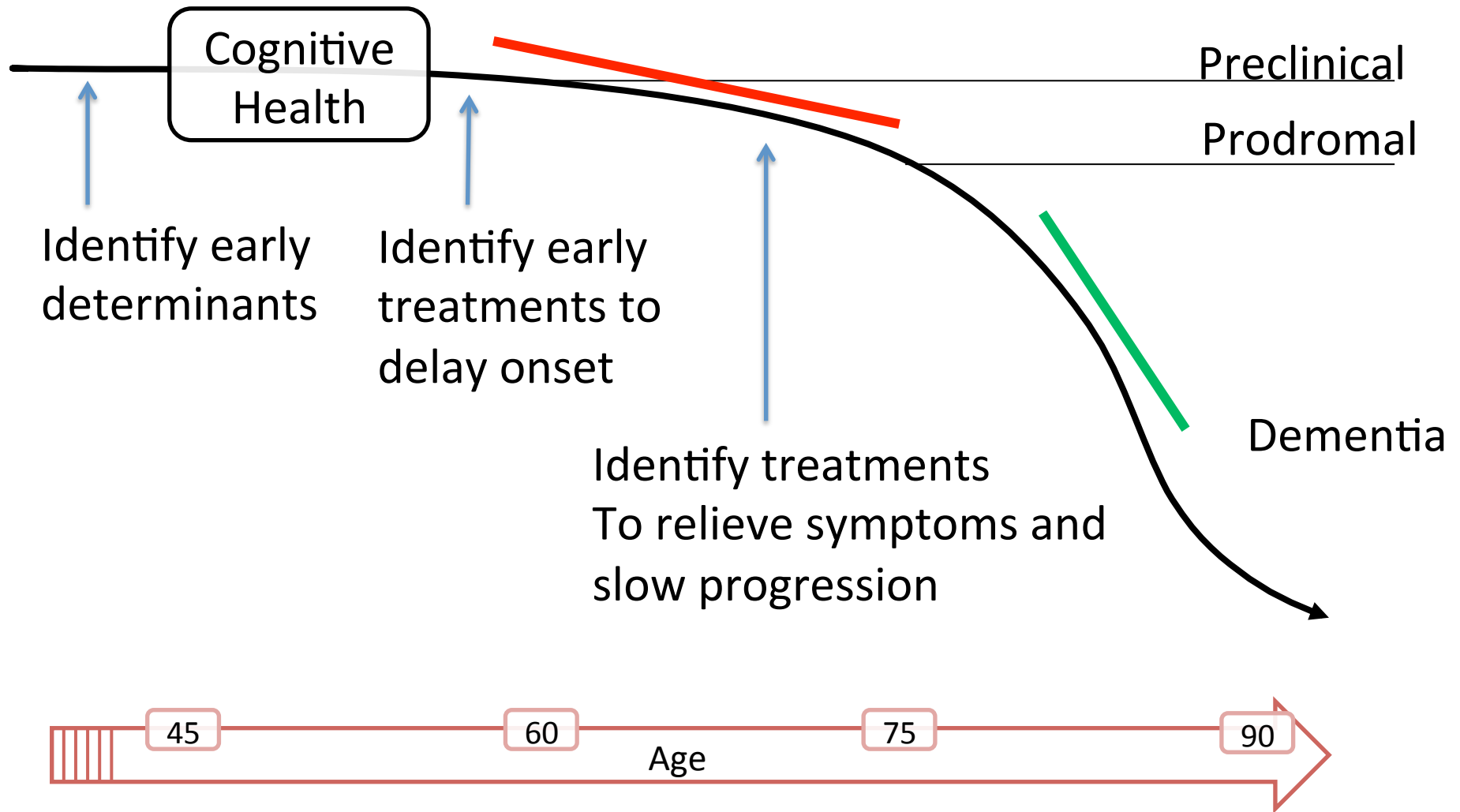
50,000 people



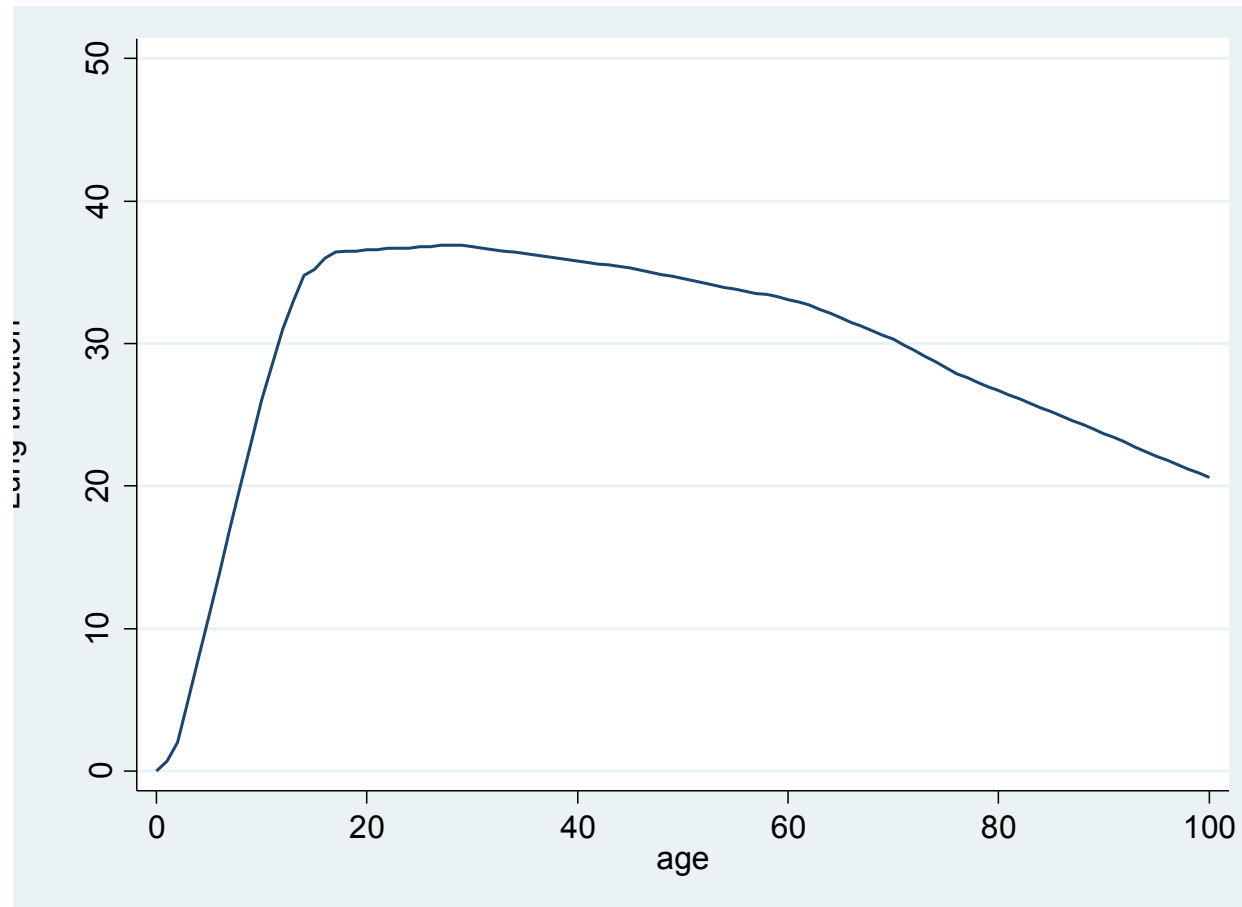
500,000 people



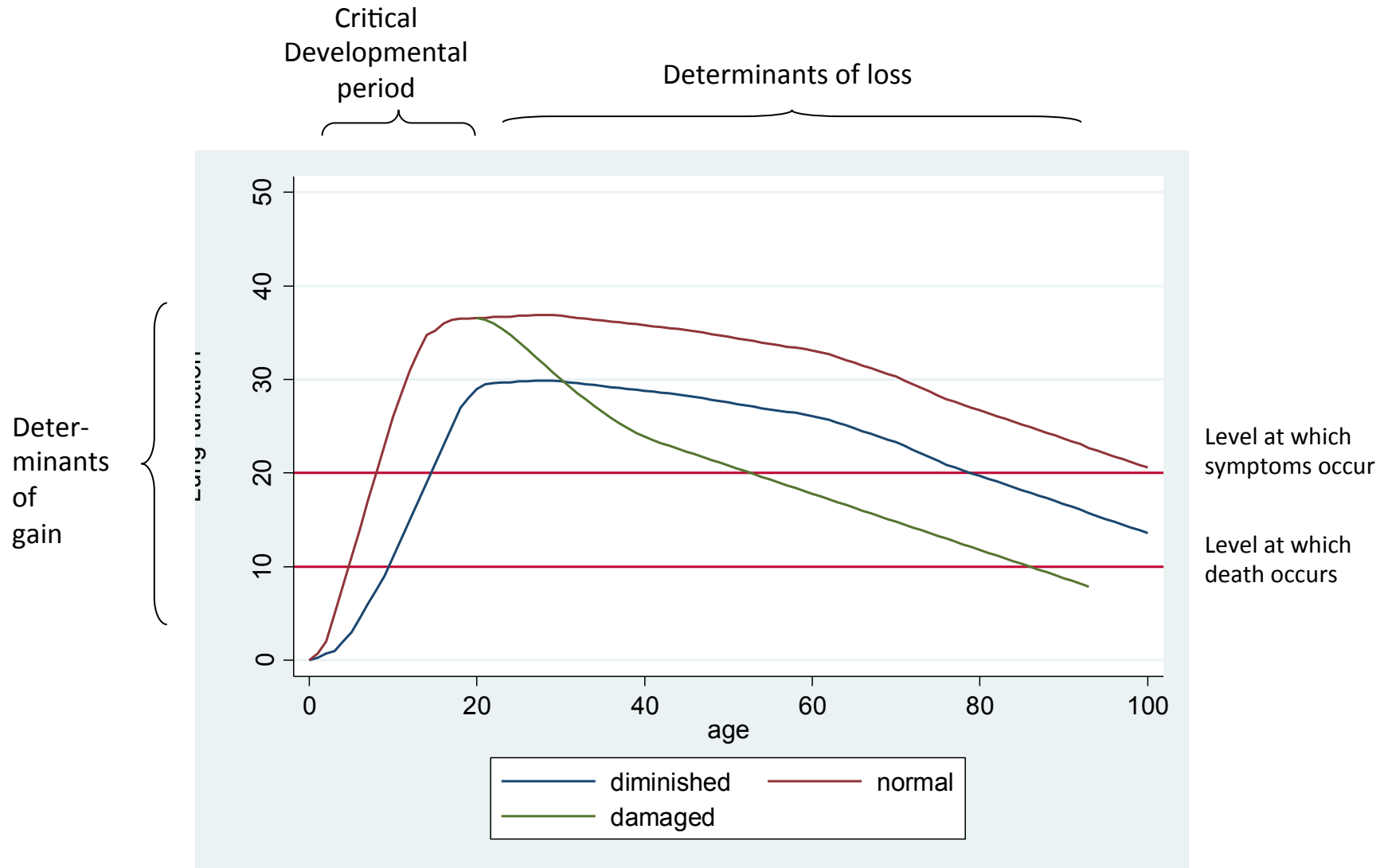
The experimental medicine challenge



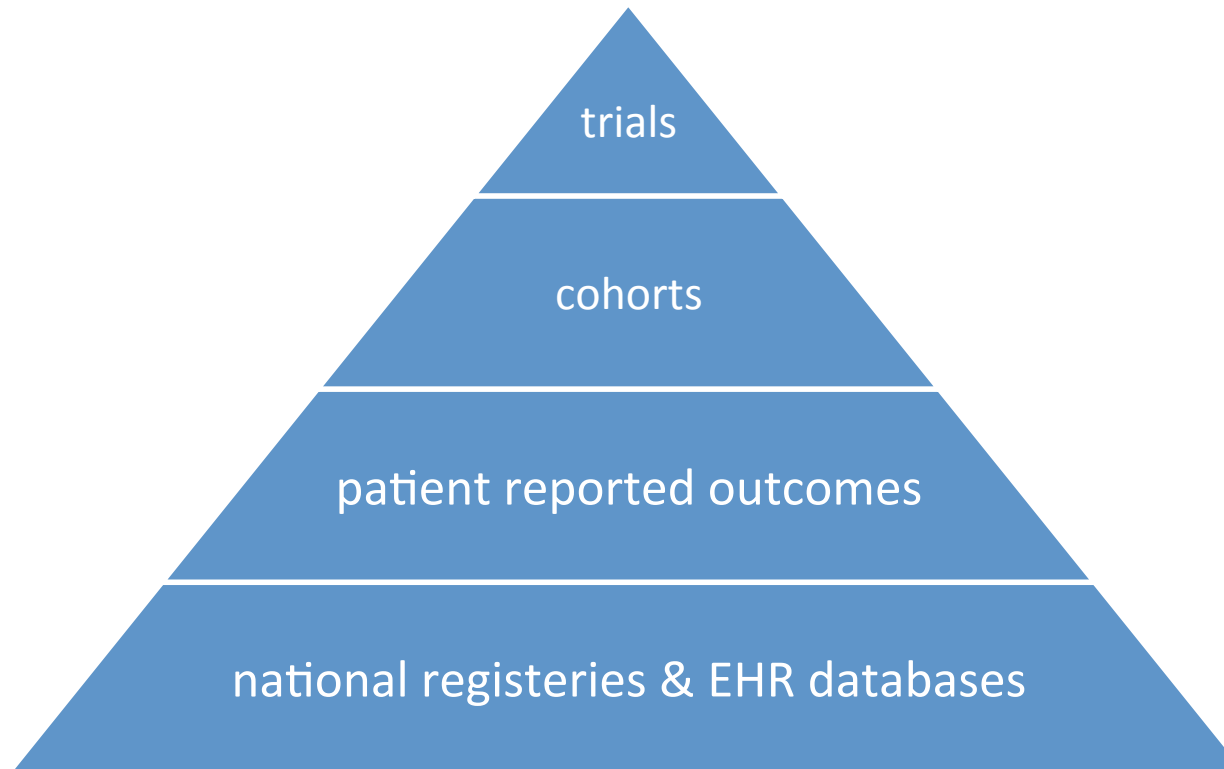
Determinants of lung function over the lifecourse



Determinants of lung function over the lifecycle



The data integration challenge

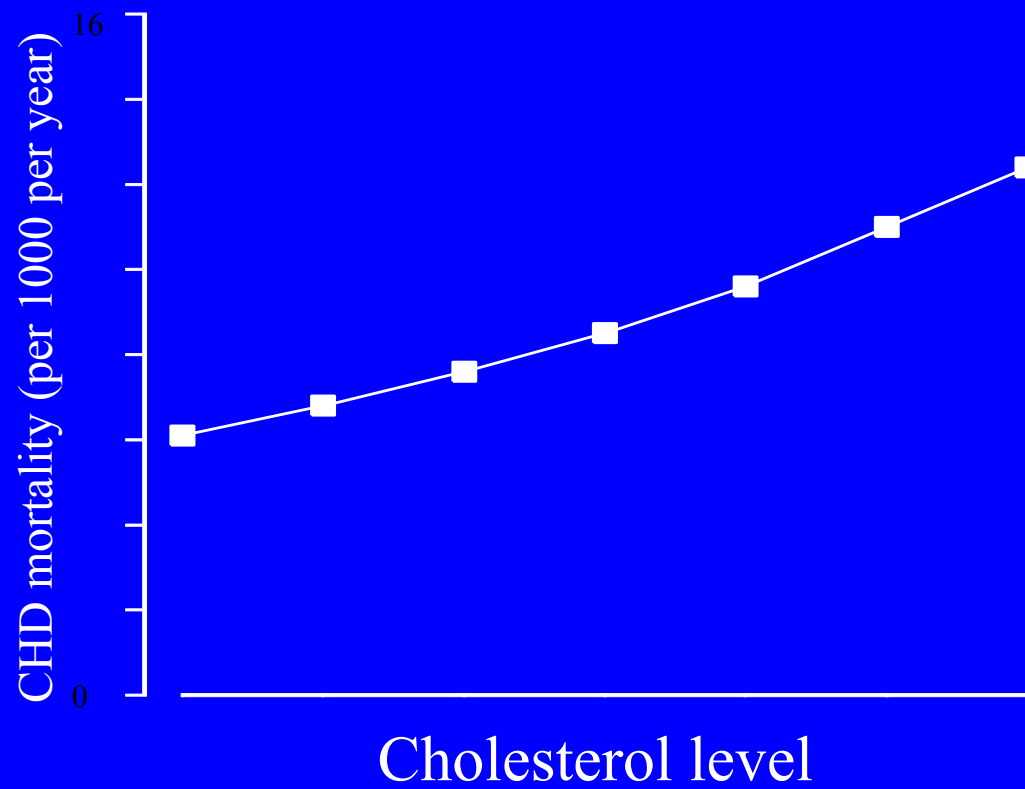


Country	Source (n)	Setting	Diagnosis	Cognition	Comorbid	Medication	Care Qy'y	Imaging	Genetics	Health	Lifestyle	Socio-econ	Devices
Denmark	Na patient registers (5.6M)	Hospital	✓		✓								
	50 linked clinical databases (5.6M)	Hospital	✓		✓								
Netherlands	IPCI (2M)	Primary care	✓		✓	✓				✓			
	Amsterdam Dementia cohort (4K)	Memory clinic	✓	✓		✓							
	Parelsnoer clinical cohort (1K)	Nat. memory clinic		✓	✓								
	ACTIFCare cohort (400)	Home living	✓	✓						✓	✓	✓	
	Learn cohort (300)	Memory clinic	✓	✓	✓	✓		✓			✓	✓	
Spain	SIDIAP (5.8M)	Primary care	✓		✓	✓				✓			
	BIFAP (7.6M)	Primary care	✓		✓	✓				✓			
	ReDeGi register (6K)	Hospital	✓										
Sweden	LISA register (10M)	Insurance data										✓	
	Nat. Patient registers (10M)	Hospital	✓										
	Social services register (10M)	Administrative										✓	
	Tax Agency's register (10M)	Administrative										✓	
	VEGA health care reg. (1.6M)	Regional reg.					✓						
	QRegPV) (10M)	Primary care	✓				✓						✓
	National health care regs. (10M)	Administrative			✓					✓	✓		
	Military service register (7M)	Administrative	✓	✓	✓	✓				✓	✓	✓	
	Gothenburg pop. studies (10K)	Population cohorts	✓	✓	✓	✓				✓	✓	✓	
Women's cohort (400)	Population cohort												
UK	CPRD (5M)	Primary care	✓		✓	✓				✓			
	SAIL (3M)	National linkage	✓		✓	✓						✓	
	UK CRIS (3M)	Mental health	✓		✓	✓							
	HSCIC (56M)	Hospital	✓										
	SHIP (5.7M)	National linkage	✓		✓							✓	
	Dementias Platform UK (2M)	Population cohorts	✓	✓	✓	✓		✓	✓			✓	✓
	Cygnus care cohort (500)	Care homes	✓		✓	✓		✓	✓				✓

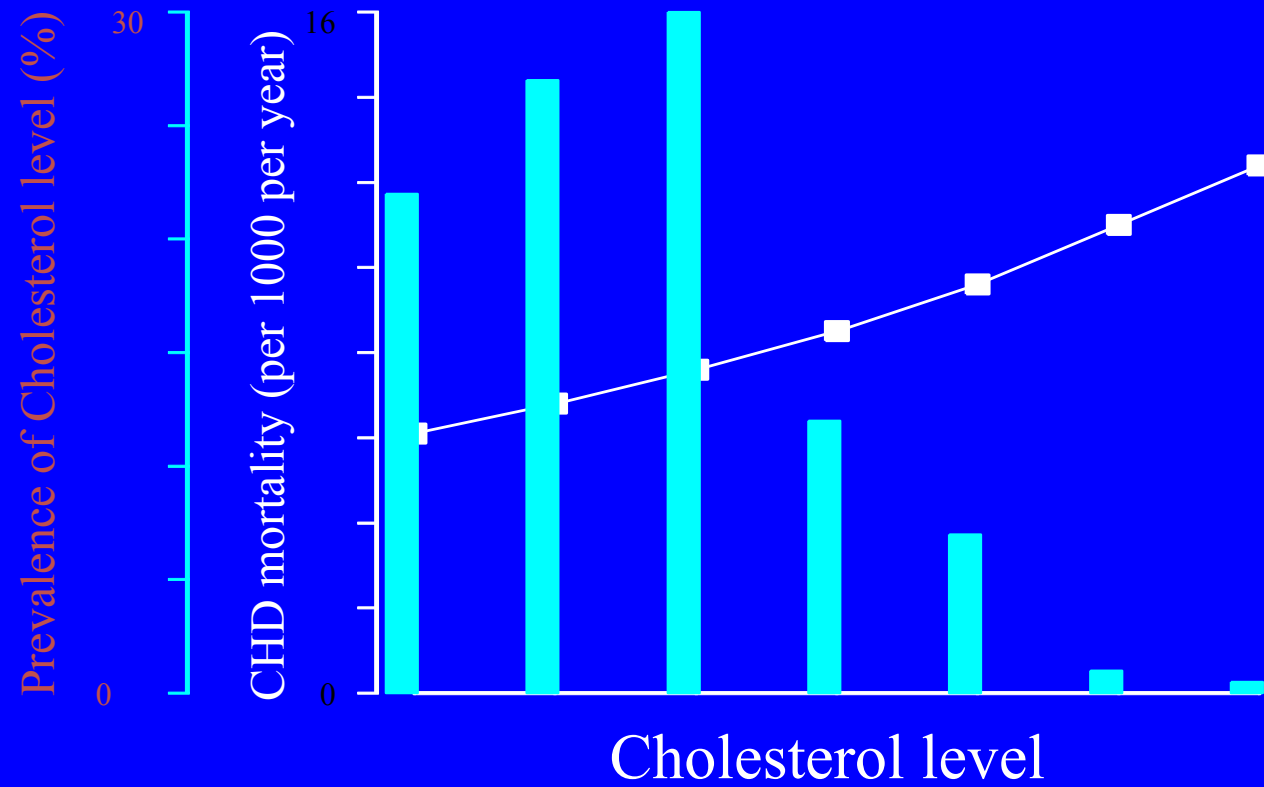
Risk stratification for clinical studies (and in silico experiments)

Sample	N
UKB base population	502,713
Episodic memory	498,053
Episodic memory >2 SD below mean	17,096
..... plus age 55 years+	12,447
..... plus APOE4 carrier (60%)	7,468
..... plus APOE4/4 (14%)	1,742

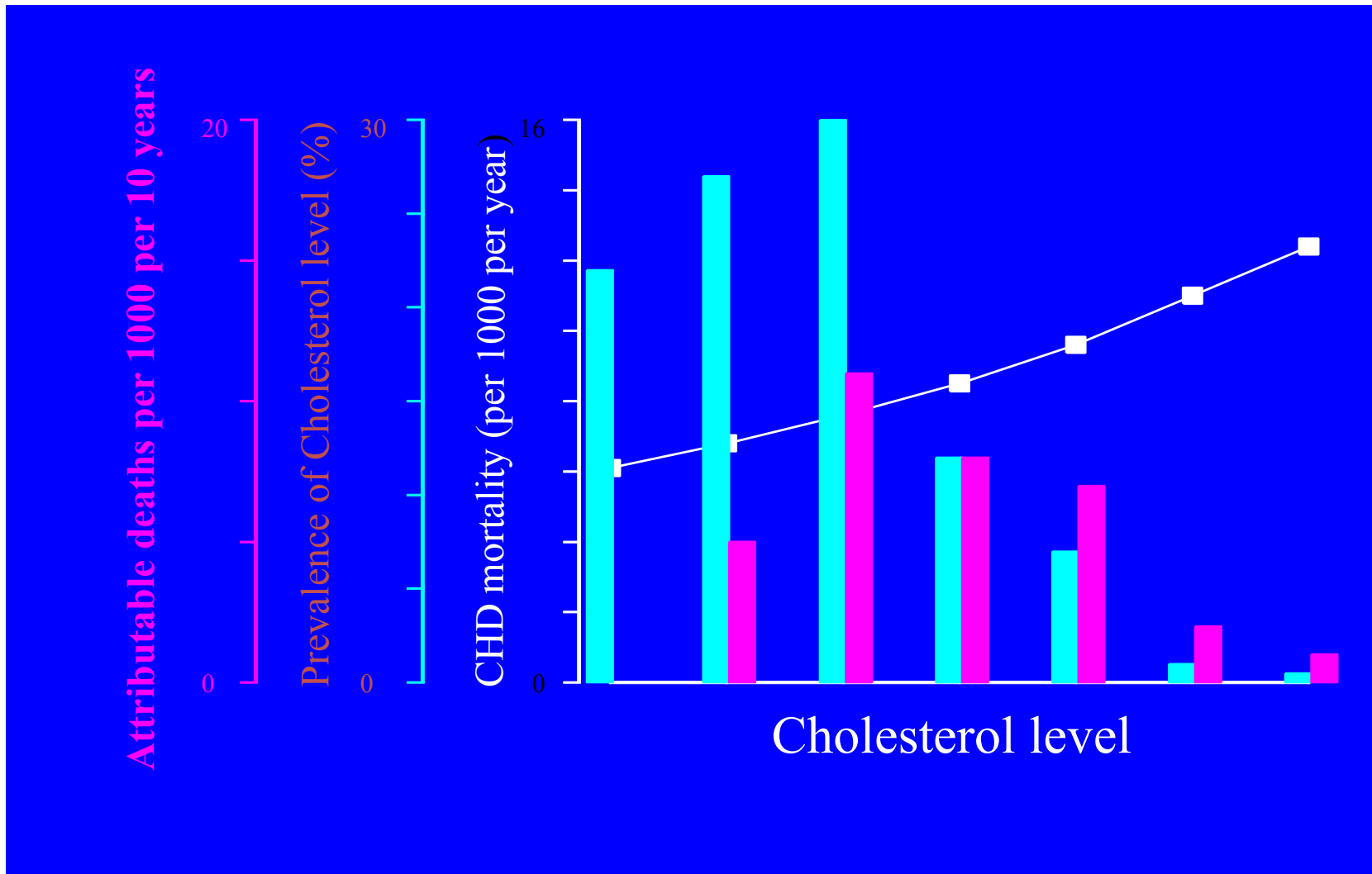
Public health impact



Public health impact



Public health impact



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